

REMARKS

Reconsideration of this application, based on this amendment and these following remarks, is respectfully requested.

Claims 1 through 3, 5, 7, and 28 through 33 remain in this case. Claims 1 through 3, 28, 30, 32, and 33 are amended. Claims 34 through 39 are canceled in this paper.

Claim 28 was objected to because of a mistake in its dependency, and is amended as suggested by the Examiner. Claim 36 was objected to because of a mistake in reference to an antecedent, but is canceled, obviating the objection.

Claims 1, 7, and 28 through 36 were rejected under §102(e) as anticipated by the Ahmed et al. reference.¹ Regarding claim 1, the Examiner asserted that the digital data streams $Z_i[nT]$ and $Z_2[nT]$ disclosed by the reference² (data streams $F_i[nT]$ after filtering) are combined by IFFT block 906A and then converted to analog and upshifted, meeting claim 1.³ The particular additional requirements of dependent claims 7 and 28 through 32 were also found by the Examiner in the Ahmed et al. reference.

Claims 2, 3, 5, and 37 through 39, were rejected under §103 as unpatentable over the Ahmed et al. reference in view of the Calderone reference⁴. Relative to claim 2, the Examiner asserted that the Ahmed et al. reference fails to disclose that the upshifting of the first analog signal central frequency comprises upshifting the central frequencies of the combined analog signal. The Examiner asserted that the Calderone reference provides such teachings in connection with its first and second mixers 140, 160 in conjunction with its synthesizers 145,

¹ U.S. Patent No. 6,519,773 B1, issued February 11, 2003 to Ahmed et al., on an application filed February 22, 2000.

² Ahmed et al., *supra*, Figure 9A.

³ Office Action of September 10, 2004, page 3, § 4.

⁴ U.S. Patent No. 6,477,182 B2, issued November 5, 2002 to Calderone, on an application filed June 8, 1999.

165.⁵ The Examiner further asserted that one skilled in the art would have obviously combined these teachings into the Ahmed et al. method to process a plurality of modulated IF carries with a single up-converter. The specific additional limitations of claims 3 and 5 were found by the Examiner to be present in the Ahmed et al. reference.

Claim 1 is amended to overcome the §102 rejection. Amended claim 1 now requires that the first and second digital data streams are modulated into first and second sequences of digital samples, respectively. It is these first and second sequences of digital samples that are then combined to create a first combined digital data stream signal, which is converted to the modulated first analog signal and upshifted by the remainder of the steps of the claim. Claims 30 and 32 are amended for consistency with this amendment to claim 1. The specification clearly supports this amendment to the claims,⁶ and as such no new matter is presented. And as described in the specification,⁷ this invention provides the important advantages of greatly reducing the number of components in a headend, specifically by reducing the number of upconverters, D/A converters, filters and the like.

Applicants respectfully submit that amended claim 1 and its dependent claims are novel over the Ahmed et al. reference, on the grounds that the reference does not teach the combining of sequences of digital samples corresponding to modulated digital data stream signals, as now required by amended claim 1.

As mentioned above, the Examiner considered IFFT modulator 906A as effecting the combining of digital data stream signals. However, amended claim 1 now requires the modulating of the first and second digital data stream signals into first and second digital sequences of digital samples, and then the combining of these first and second sequences to create a first combined digital data stream signal. In contrast, block 906A of the Ahmed et al. reference is itself a modulator, and its output constitutes a sequence of digital samples $J_i[nT]$ ⁸ (or

⁵ Office Action, *supra*, page 6, § 6, citing Calderone, *supra*, column 3, lines 10 through 15 and 26 through 37, and column 3, line 64 through column 4, line 11.

⁶ Specification of S.N. 09/755,970, paragraph [0019]; see also Figures 4 and 5.

⁷ Specification, *supra*, paragraphs [0017] and [0018]; paragraph [0029].

⁸ Ahmed et al., *supra*, column 13, lines 20 through 22.

$G_i[nT]^9$, which can at most correspond to the first sequence of digital samples of the claim. A second sequence of digital samples corresponding to a second modulated digital data stream signal (as claimed) must therefore be produced by one of the other modulators 906B through 906N, according to the Ahmed et al. reference. But to the extent that the reference teaches that these sequences of digital samples from modulators 906 are combined with one another, such combining does not occur until after the individual sequences are converted to analog (DACs 908), upconverted (upconverters 912), and filtered (filters 910, 914), at summer 16. Accordingly, nowhere does the Ahmed et al. reference anywhere disclose the combining of first and second sequences of digital samples, each corresponding to a modulated digital data stream signal, into a combined digital data stream signal that is then converted to analog and upshifted, as required by amended claim 1.

Applicants therefore respectfully submit that amended claim 1 and its dependent claims are novel over the Ahmed et al. reference.

Applicants further respectfully submit that amended claim 1 is patentably distinct over the Ahmed et al. reference, and the other prior art of record in this case, because there is no suggestion to modify the teachings of the Ahmed et al. reference in such a manner as to reach the claims.

As mentioned above, the invention of amended claim 1 differs from the Ahmed et al. reference because it requires the combining of first and second sequences of digital samples, corresponding to modulated first and second digital data stream signals, respectively; this is followed by conversion to analog and upshifting of the combined signal. There is no suggestion from the reference itself to rearrange its operations in such a manner as to reach amended claim 1 (e.g., by combining first and then D/A conversion and upshifting). The Calderone reference, asserted against some of the dependent claims, also lacks teachings in this regard, especially because its teachings are evidently directed to a fully analog modulation system (there are no D/A or A/D converters anywhere shown in the reference). Accordingly, the combined

⁹ *Id.*, Figure 9A.

teachings of the Ahmed et al. and Calderone references fall short of the requirements of amended claim 1.

Furthermore, there is no suggestion anywhere in the prior art to modify the teachings of the Ahmed et al. reference in such a manner as to reach amended claim 1 and its dependent claims. Nowhere does the Ahmed et al. reference itself anywhere suggest that the output of its modulators can be, much less should be, combined prior to conversion to the analog domain. Nor is such suggestion present elsewhere in the prior art, including the Calderone reference.

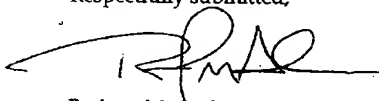
For these reasons, Applicants respectfully submit that amended claim 1 and all of its dependent claims are not only novel, but are patentably distinct over the prior art of record in this case, including the applied Ahmed et al. and Calderone references.

As mentioned above, claims 33 through 36 were rejected under §102 as anticipated by the Ahmed et al. reference, and claims 37 through 39 were rejected under §103 as unpatentable over the Ahmed et al. reference in view of the Calderone reference. Claims 34 through 39 are canceled, obviating their rejection.

Claim 33 is amended to now depend on amended claim 1. Its additional limitations, relative to amended claim 1 upon which it depends, were previously present in the claim, and as such no new matter is presented by this amendment to claim 33. For the same reasons as discussed above relative to amended claim 1, Applicants respectfully submit that dependent claim 33 is novel and patentably distinct over the Ahmed et al. and Calderone references.

For the above reasons, Applicants respectfully submit that all claims now in this case are in condition for allowance. Reconsideration of this application is therefore respectfully requested.

Respectfully submitted,



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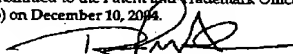
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